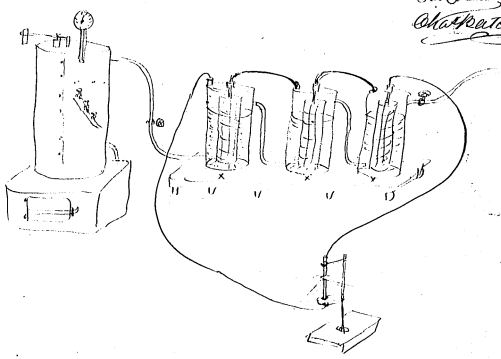
Laboratory Scrapbook, Cat. 1146

This scrapbook covers the period October 1877-December 1880. The notes and drawings are by Edison, Charles Batchelor, John Kruesi, and Samuel D. Mott. All relate to electric lighting, except for a note on the telephone, dated July, 1878, and a drawing of ore milling apparatus, dated April 20, 1880. Many of the drawings and notes were prepared for caveats or patent applications. On the back of some of the notes and drawings there is a page/volume number, indicating that they were removed from the sequence of numbered pages in Unbound Notebook, Vol. 16. Some of the material in this book has also been copied into Experimental Researches, Vol. 1. The book contains approximately 140 unnumbered pages.

Oct 1877

Dynamo Voltaic apparatus.

Oct 26 1877
J.A. Ewing
Charles Tomlinson



X X X are cast iron boilers with a cylindrical neck in middle fitted with pressure gauge and safety valve. The iron cylinders are about 7 feet high 3 feet diameter. They are connected together in series by 6 tubes. They are filled 2/3 full each with water in which Carbonate of soda is dissolved to conductor such as SO_3 = leading from a lead boiler one from which passes through the spiral and exists at Y keeping it displacing. Our experiment (until we succeeded with in a correct way = galvanometer in electrical circuit and constant deflection was had many times from 10 to 15 without attempt to go with steam a regular supply of water

T. A. EDISON,

Menlo Park, N. J., 1880.

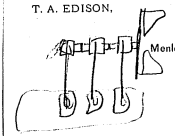


fig 86.
Caveat 76

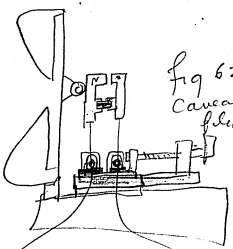


fig 62 -
Caveat 76
filed Mch 1876

83-
damper

fig 83. Caveat 76

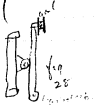
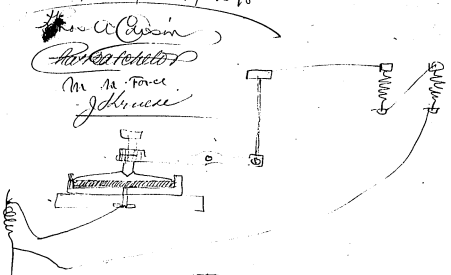
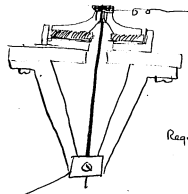


fig 25

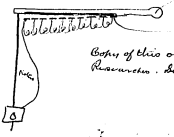
4

Electric Light April 17 1878





Regulating by Faraday's principle.



Copy of this on page 46 Vol 1. Experimental Researches. Sept 28. 1878

Wm Garman

July 1878

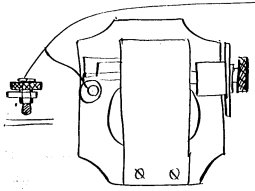
T. A. EDISON. Delethorpe

T. A. Edison
Menlo Park, N. J. 187

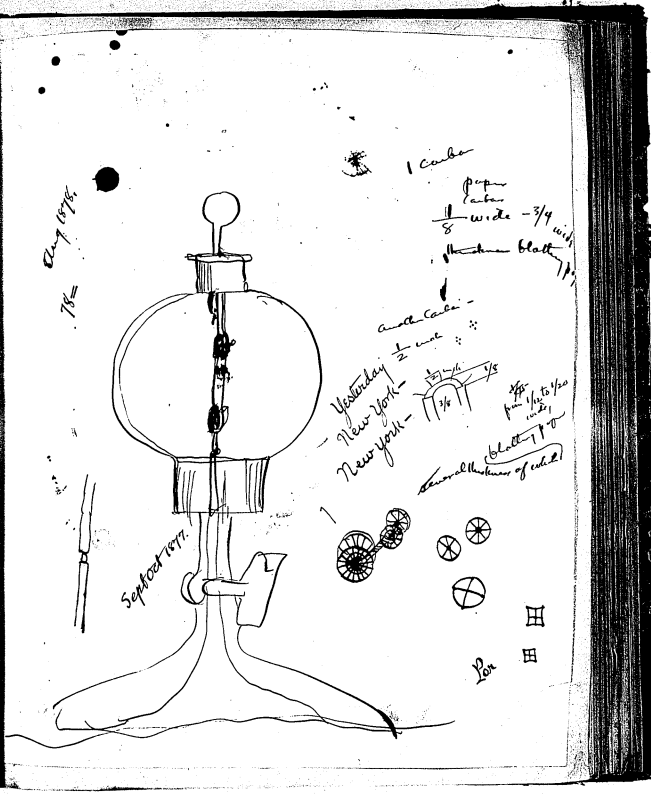
Johnson & Dyer
July 17 1878

Kruesi.

This must have a cam and thumb nut to lift out the worm so as to put in fresh pieces It can screw on with shoulder screw



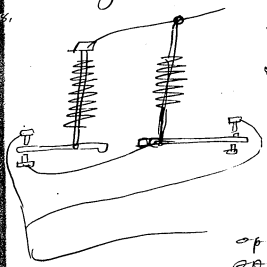
Batchelor


Aug 1876
Sept 1877
1 Cable
Paper
Cable
1/8 wide - 3/4 with
Another Cable -
Yesterday
1/2 inch
New York -
New York -
3/16
3/5
1/32 to 1/50
Blatt - 1870
Blatt
Lot

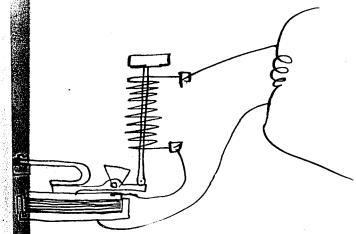
Sept 8 1878

Thomas A. Edison

Electric Lamp



It may be possible that one regulator at the Central Station may be made to do it for all the main current being regulated by the heat of a large spiral so that as the current slightly rises to a point approaching the melting point of all the spirals that it will be opened by the effect of the spiral at the Central Station.



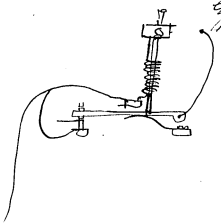
Carbon discs

or other form of Incandescent

Sept 9 1870 J. H. Ream

Chas. A. Tichenor

Arc Light



Wallace.

500

Million

1000 500

Wallace Portland Wallace

25, 100,

Wallace Wallace

Boston Wm Wallace

Wallace Wallace

Wallace Wallace

Wallace Wallace

Copied on page 181. Vol 1.

E. & R. Rosenwald Oct 9, 1870

Electric Light

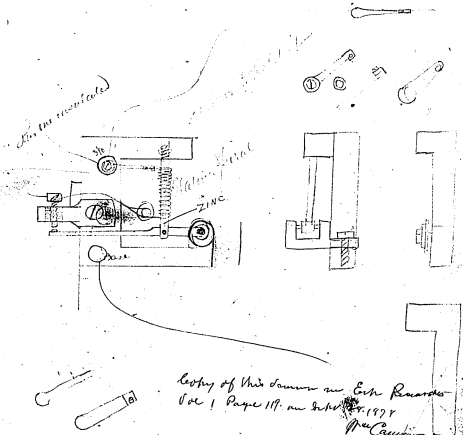
Sept 10. 1878

Chas Batchelor

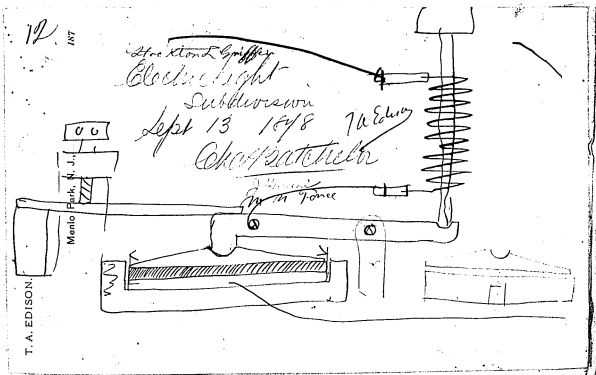
T A Edison

Menlo Park

M M Pres



Copy of this Drawing on Exh Records
Vol 1 Page 117 on October 1878
Wm Carman



Copied this on page 122 Elec. Researches Vol 1
30th Oct 1878 Wm Boarman

Electric Light Subdivision

Sept 23 1878

T. A. EDISON.

#7/8 44

44

Menlo Park, N. J. 187

Electric Light
Dec 27, 1881
Thomas A. Edison

Witnesses
M. M. Pierce
J. Krusse

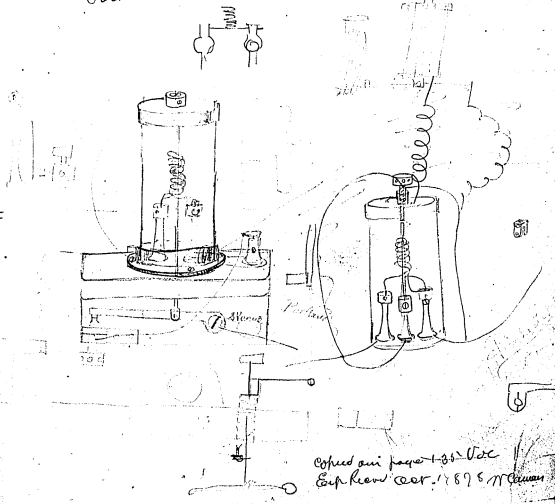
Copied on Page 1110 Vol 1. 674 Rec
Oct 2. 1878 M Pancoast

Copied on page 1035 Vol II
Eng Rec Oct. 1878 M Pancoast

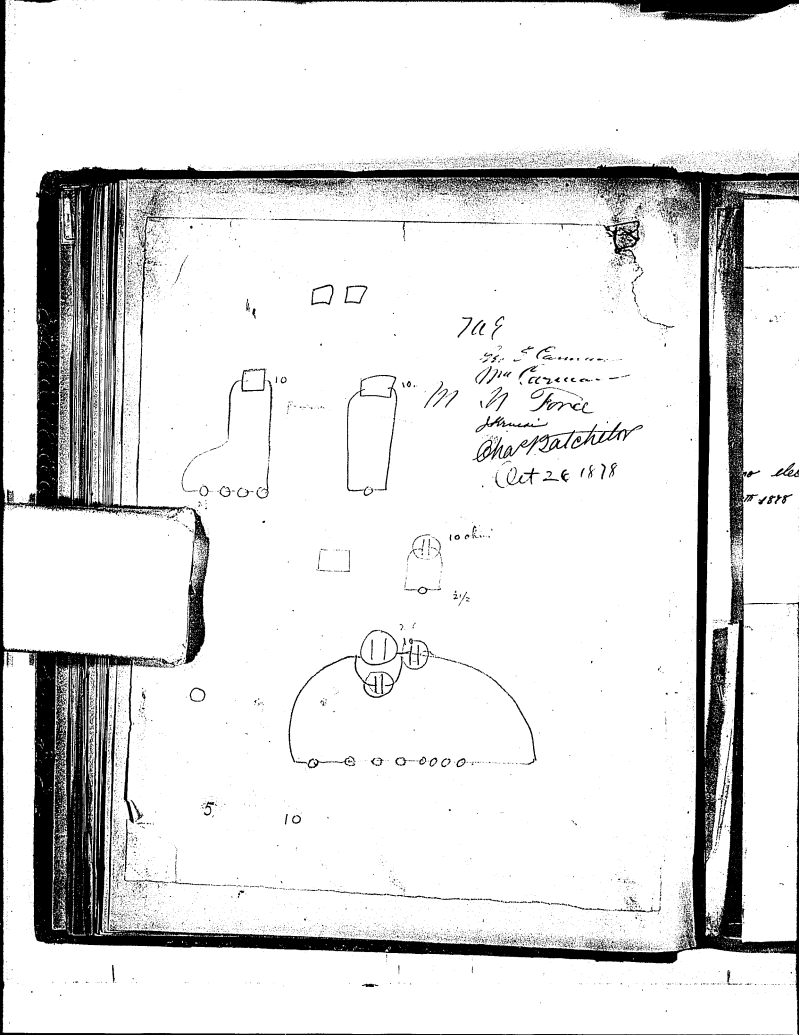
91
92

Sept 23 to 1878
Edison Lamp
A Edison 81
Electric Tube
J Krueger
M N Power

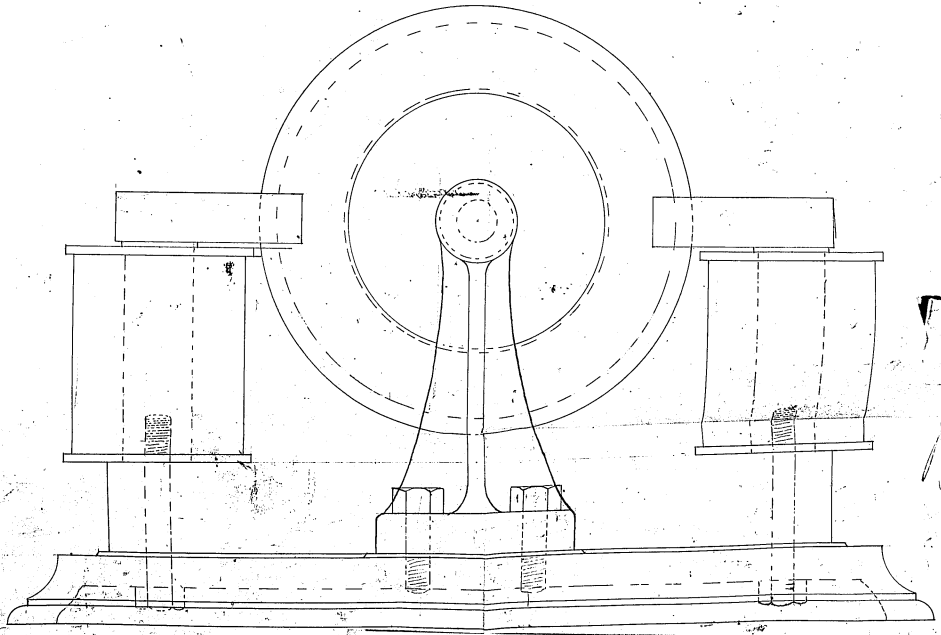
Double coil fastens both at one end
expands lengthwise instead of bulging
out



Copied on page 1-31 Doc
Exp Rec Oct. 1878 M Clemens

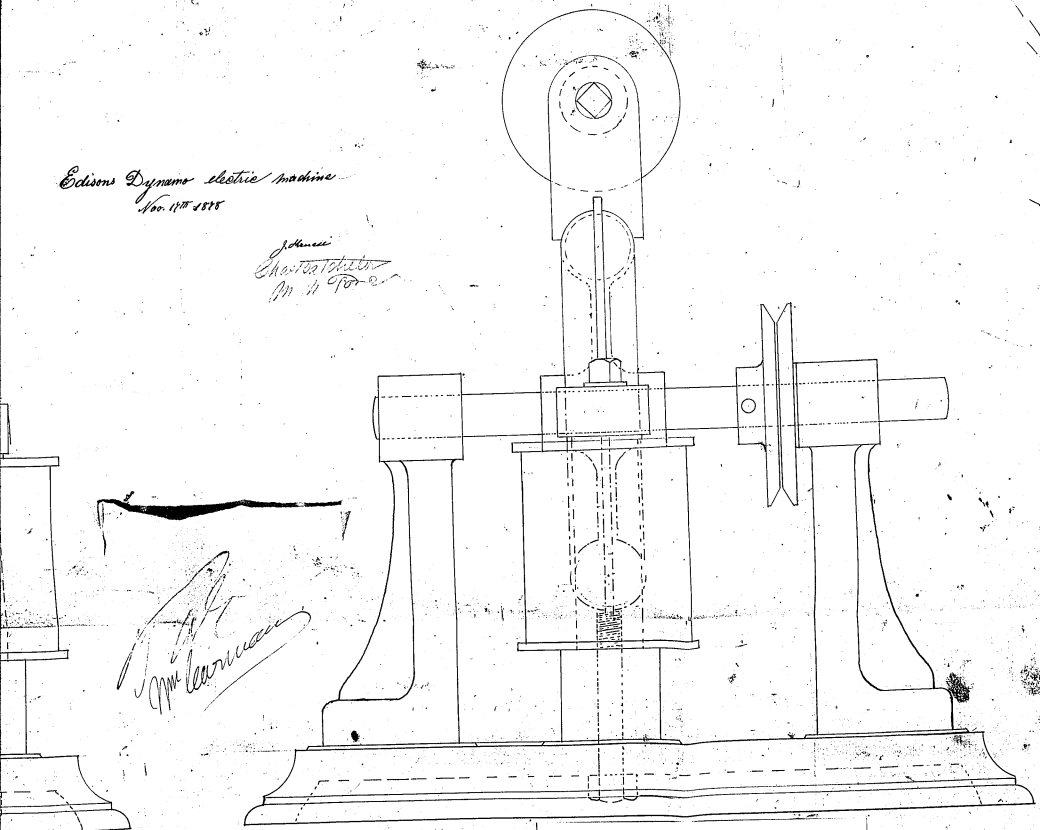

10
10.
10 oohm
2½
5
10

Edisons Dynam
Nov. 17

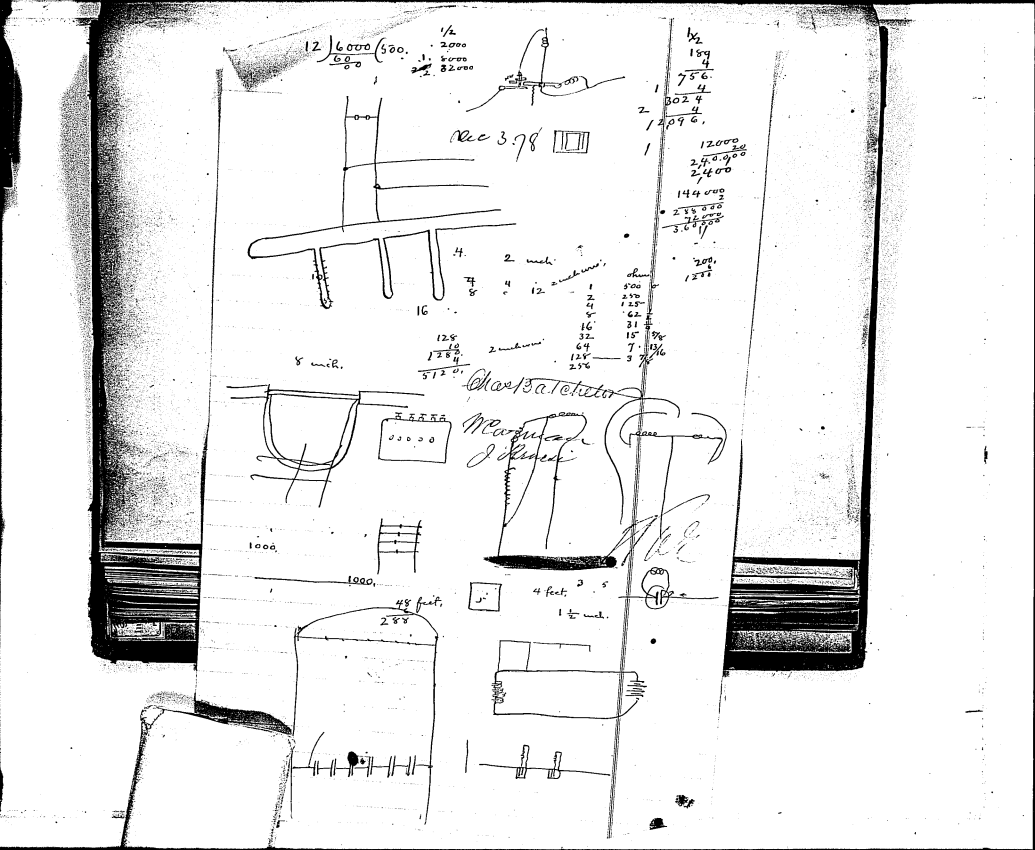


[CONTINUED ON THE NEXT FRAME]

Edisons Dynamo electric machine
Nov. 17th 1878

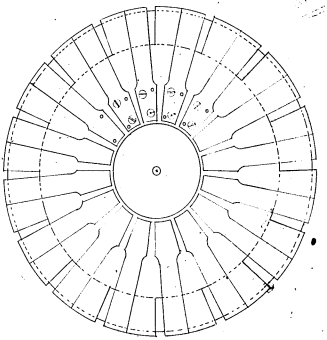


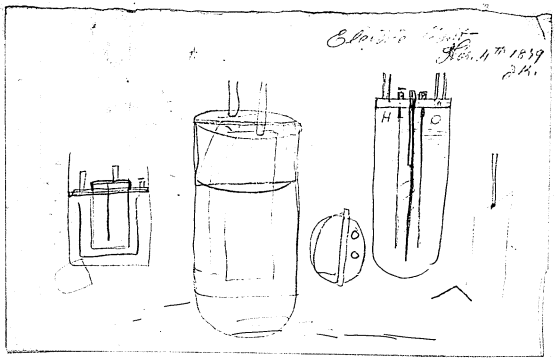
[CONTINUED FROM THE PRECEDING FRAME]


Rec 3.78
8 mil.
Charles Batchelor
Mackintosh
J Kruesi
1000.
1000.
4 feet.
1½ inch.

— January 1879 —

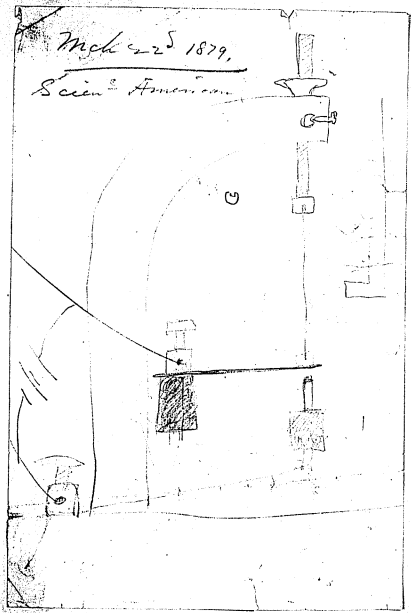
Only 12 springs
not 16 —
Board



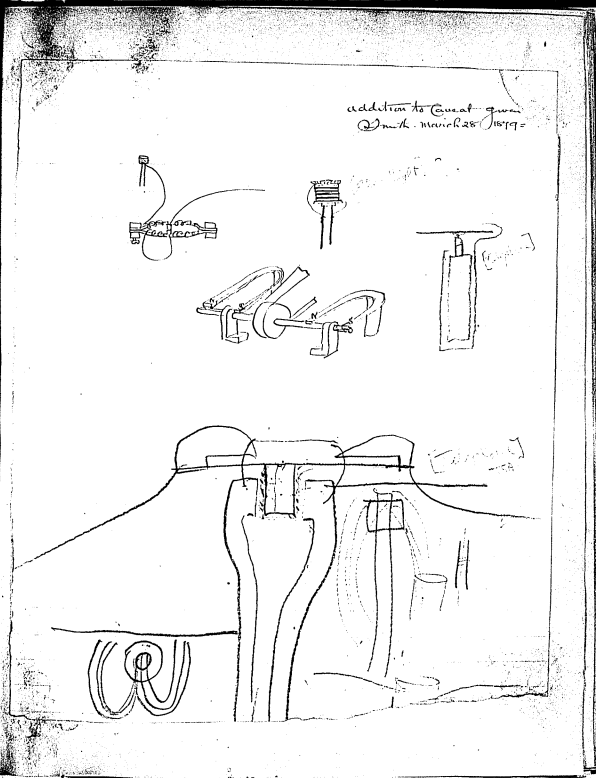

H
O

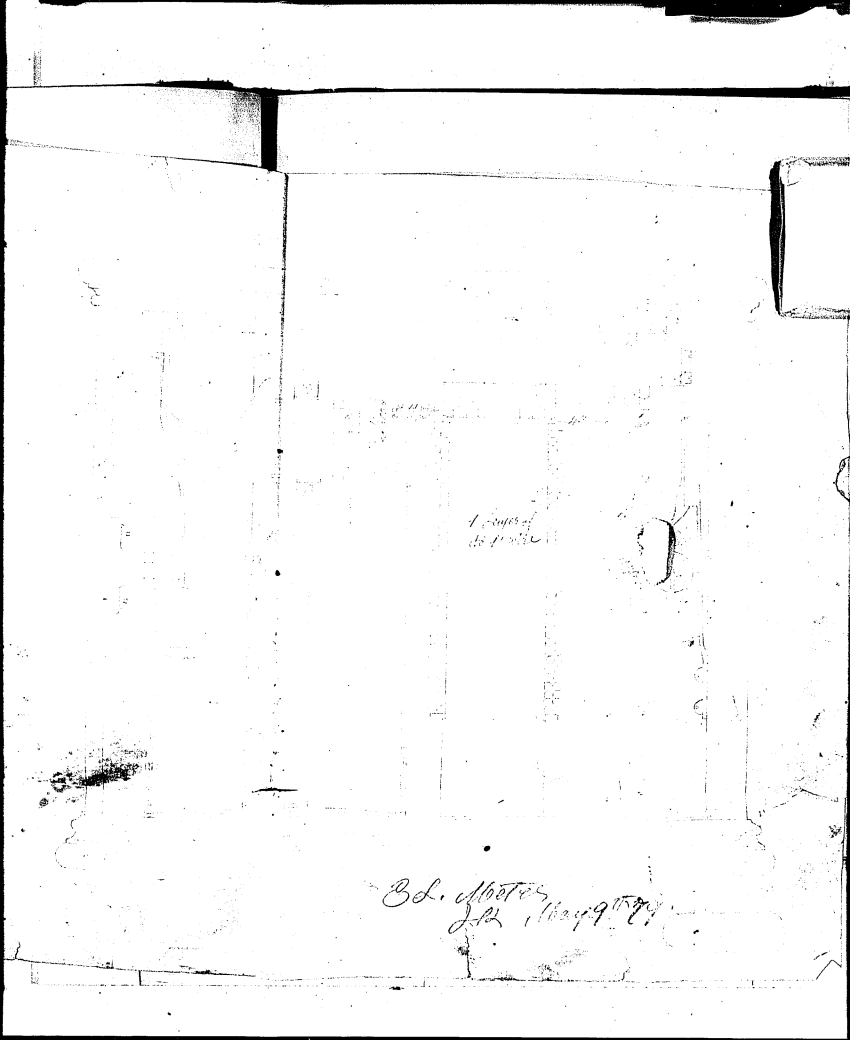
364

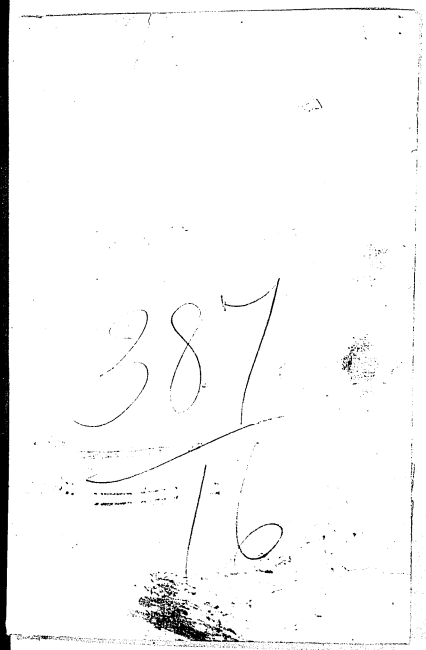
16

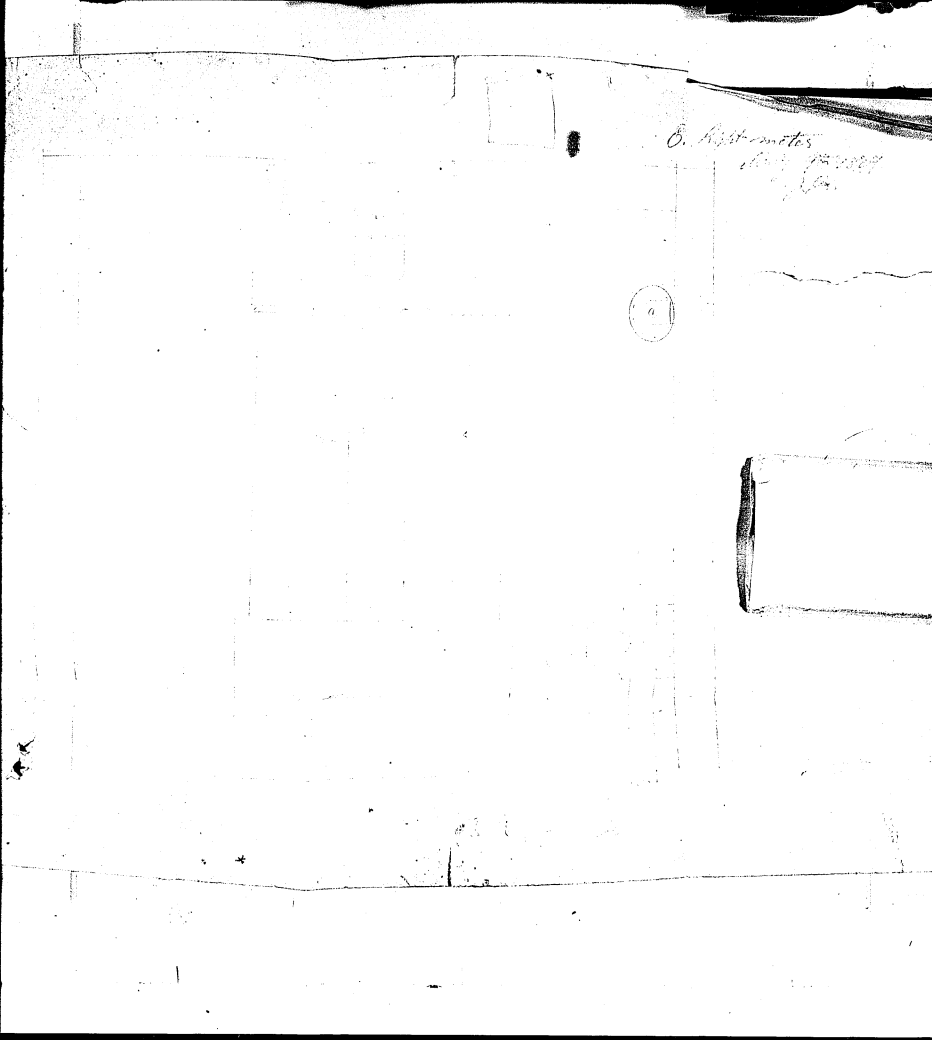

March 22nd 1879,
Scientific American

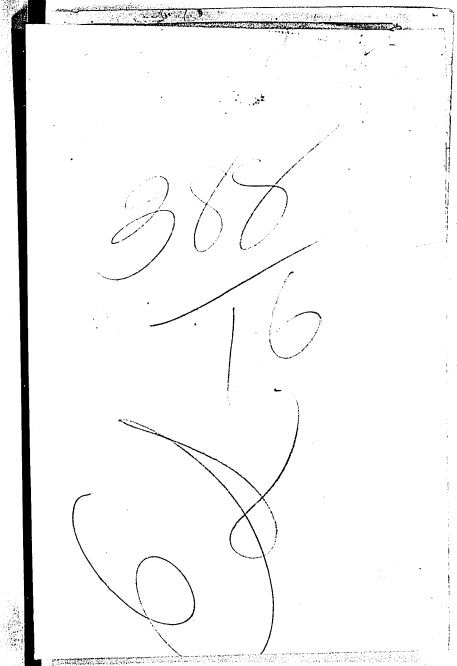
addition to Caveat given
March 28 1879

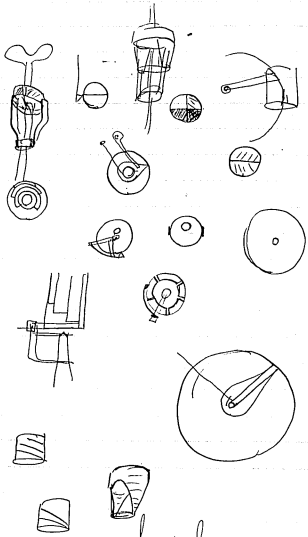





387
16

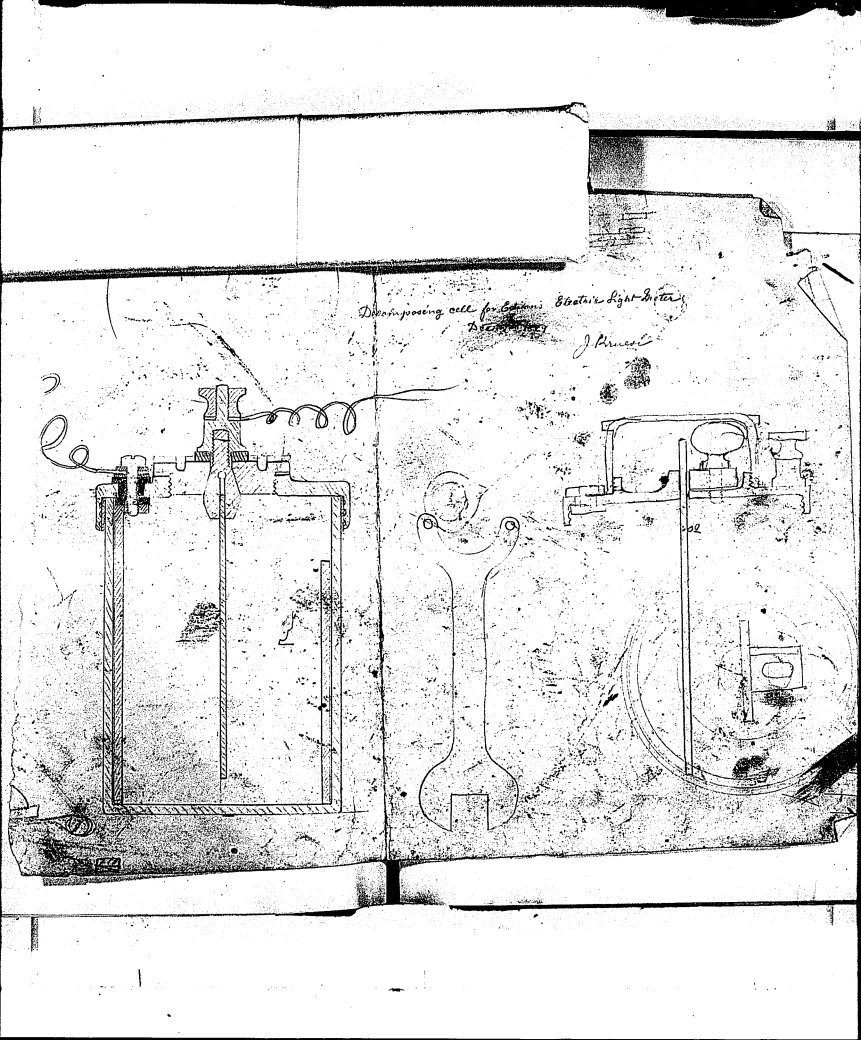



388
16



Decomposing cell for Edison's Electric Light System

J. Princeton



Menlo Park, N. J., Dec 19th 1879

English

Provisional Patentee

U.S. Consul

In my system of Electric Lighting, I have proposed in a previous patent to Regulate the pressure or Electromotive force at the Central station by varying the strengths of the Field magnets around the Induction Coils which conduct to the Main Conductors in any or all the Electromotive force due to putting on or off lamps being indicated by an Electrometer, I find that an Electrodynometer similar to that of Webber but of high resistance

Menlo Park, N. J., 18

2

is ~~proposed~~ an improvement upon the Electric Light owing to its greater reliability.

~~Incandescent lighting is carried on by means of~~ In Metropolitan A City is divided up into districts in each district there is a Central station, which station is provided with suitable ~~machinery~~ machine power & ~~Dynamos~~ Electric generators to supply half a mile radius, At this station I employ say five Engines Each of 250 horse power, Each Engine runs by a belt a separate line of shafting on this shafting is placed

Menlo Park, N. J., ... 18

3

Say 40 Electric generators, so that each Engine & Electric System of Generators may be Condensed Complete within 1 Cubic Foot = 2 Large rods of Copper are conveyed in proximity to all the generators and commutating levers are arranged so that any generator may be placed in series & feed into the two main conductors, all the Generators so been connected to the mains are connected in Multiple arc, and the field magnet of every generator is so wound & the size of the pulley upon the shaft made such a size that it can be by means

Menlo Park, N. J., 18

41

order and of [illegible]
by a weakening or strengthening
of the field magnet the
Electromotive force of the
induction Coils may be
adjusted to same
exactly the same
Electromotive force as
all the other machines
employ several subsidiary
Electric Generators bolted
on the shaft of the first
Engine which is all in use
and the current from these
machines is conveyed by
leading wire to the field
magnets of all the
generators & same to keep
a constant field

Menlo Park, N. J., 18

4

A second series of these subordinary machines is connected to the shaft of the Engine, and connected in duplicate to be used in case of accident or in case the other fails. A switch serves to change one subordinary generator from one set to another set so the change can be made gradually. The subordinary generators are also arranged in multiple arc but the field magnets of main line generators are so connected that there will be a row of

Menlo Park, N. J., ... 18

6

Say 10 magnets connected in series and these sets connected in multiple arc. Switches are provided whereby Say 10 field magnets are disconnected at once the Induction Coils having previously been removed from the mains for energizing the field magnets of the Subdividing generators I use a Dynamo Electric machine the current from which passes through the field magnets of all the Subdividing generators Each in series or in

Menlo Park, N. J., ... 18

Multiple arc in this
Circuit & place a large
number of resistance
Coils of large wire and
subdivided so that
each has say $\frac{1}{50}$ of an
ohm a wire between
each resistance coil leads
to a Commutator which,
in turning short circuits
in greater or fewer
number of Resistance
Coils, thus increasing or
decreasing the strength
of the Current in the
Fieldmagnets of the
Dynamo Machine. This in turn increases
~~the~~ or decreases the
Strength of the Current

Menlo Park, N. J., ... 18

8

in the induction Coil
to create them, and this
current in its turn
increases or decreases the
strength of the field
magnets of the main
line generator &
a rise or fall in the
pressure or Electromotive force
of the Current according
as more or less energy is
drawn from the generator
Station by putting on
or off Lamps or Electric
Motors
Thus I am enabled to
Cause a rise or fall in the
pressure or Electromotive force
by turning of the Commutator
Handle. To indicate the

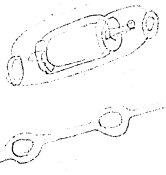
Menlo Park, N. J., ... 18

rise & fall of Electromotive
the Operator at the Commutator
has before him the [illegible] dynamometer
~~voltmeter~~ ~~ammeter~~ as well as several standard
Lamps to indicate the rise
& fall of P.
The apparatus & apparatus to
place in a room disconnected
from the main Room containing
the generators & Engines. All
connections therewith being
made by wires. But the
movements of the Commutator
is transferred by gearing
& shafts to a large
dial placed on the
~~door~~ generator room &
one in the Engine room
so that the Electrician
master may know

Menlo Park, N. J., ... 18

10

the proper time to start up or stop down one or more of the engines. It will probably happen in practice that from the breaking of belts or wires or other causes that ~~the~~ a generator will cease to ~~pass~~ electricity to the main although the ~~in~~ induction coil be intact this will cause the current from all the generators to cause the generator to reverse its motion & perhaps burn the wire, to prevent this I interpolate a short wire in the induction coil Circuit made of Bismuth



well mark [illegible]
wire of the [illegible]
to too great a heat
is reached,
Each Generator is placed
with a loose pulley on
a Stud upon an upright,
upon which the belt may
be moved in case a
generator is to be repaired
when the battery of generators
of which it is one is
in use,
This will Prevent that
All different parts of the
main Circuit outside of
the [illegible] Station
Electric Engines
almost [illegible] to the

fusible metal which
will melt & save the
wire of the generator
if too great a heat
is created,
Each Generator & plate
~~with~~ a brass pulley on
a shaft upon an upright
upon which the belt may
be moved in case a
generator is to be repaired
when the battery of generators
of which it is one is
in use,
This will show that
All different parts of the
many Circuit Outside of
the ~~Central Station~~ generators
~~have~~ Electric Engines
almost similar to the

Menlo Park, N. J., ... 18.

(17)

may be placed
generators for the purpose
of ~~subdividing~~ giving
out power to about ¼.
I find that Engines giving
varying amounts of power
from 20 horse to 1/20 of
horse may all be
worked in multiple arc
the less the power required
the smaller the wire
the greater must length of a
finer wire used that for
a larger power, & I find
that it is practicable to
place the ~~major portion~~
greatest length
of the wire & resistance
upon the field magnets

In using these small machines
in multiple arc for running

Menlo Park, N. J., ... 18

13

a sewing machine & arranged
a [illegible] for disconnecting
the machine from the
crank, a belt to
connect the motor with the
sewing machine having
a very small pulley on
the motor & a large pulley
on the sewing machine
so as to allow of high
speeds in the motor,
I regulate the speed of
sewing by a friction
lever pressing on the
driving pulley of the
sewing machine which
lever ~~may be~~ being
connected to the foot
rest may be pressed
lightly or heavily on the

Menlo Park, N. J., 18

14

pulley of the reversing
machine & thus
reverse or diminish its speed instead
of stopping it all together,
the pulley of the water
being a friction pulley
which allows the water shaft
to run at a slower
speed even when the
belt is slipping.
When the Motor is
arranged to pump water
to a tank I use a float
which when the water
becomes too low closes
a circuit & connects
the motor to the
mains, and when
the water is sufficient
it cuts the current

Menlo Park, N. J., 18

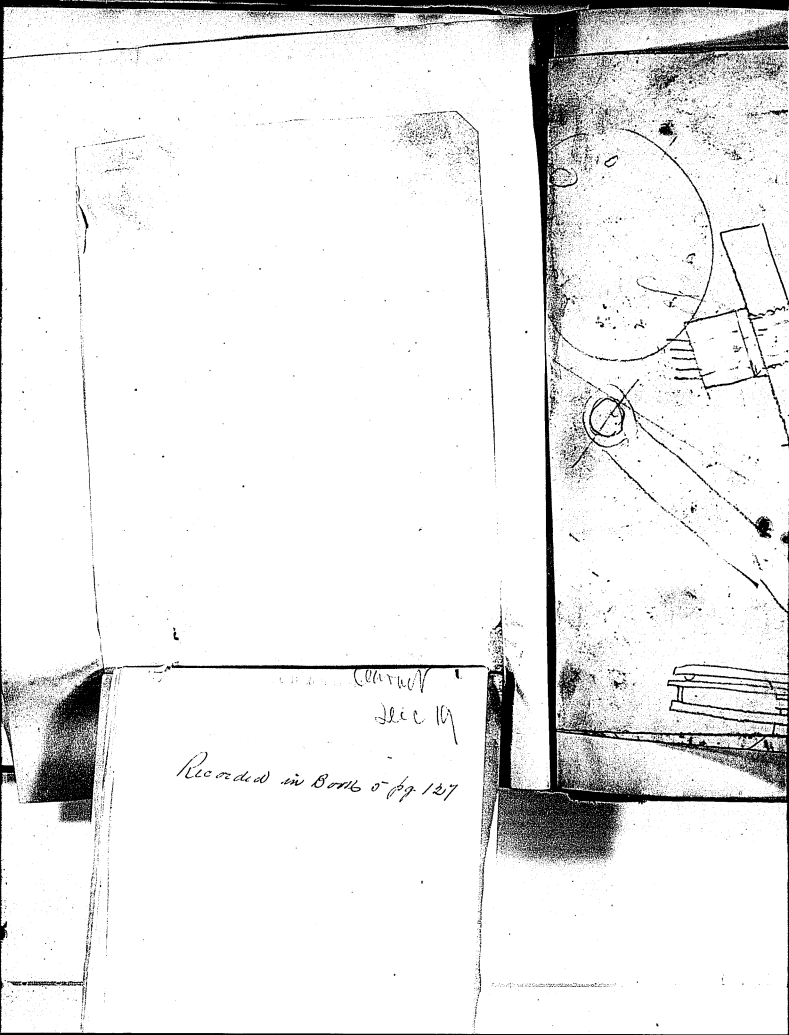
15

19th to disconnect the
Motor from the circuit
~~the~~ for running Machine
shaped with these Motors
& where an even speed
is required. I arrange
upon the shaft of the
Motor a governor with
~~weights~~ in the ordinary
~~manner~~ manner and
which when the speed
has reached a certain
point causes a lever
to open the circuit
& disconnect the
Motor from the circuit,
~~that point when~~.
These Motors work
upon the same main

Menlo Park, N. J., 78

16

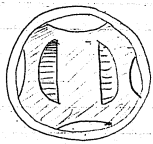
Conductor to the
lamps.



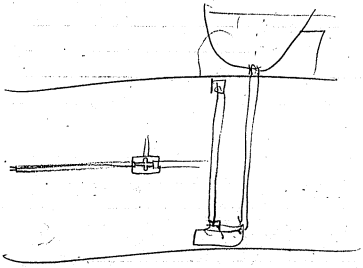
Dec 16

Recorded in Book 5 pg 127

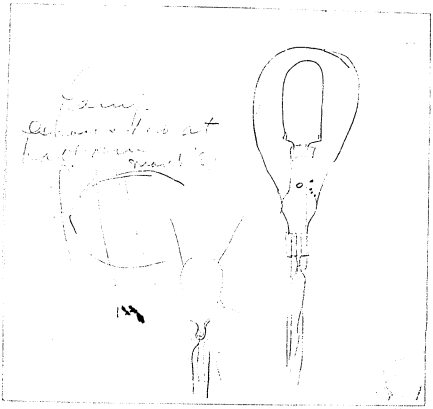
Feby 7 1880

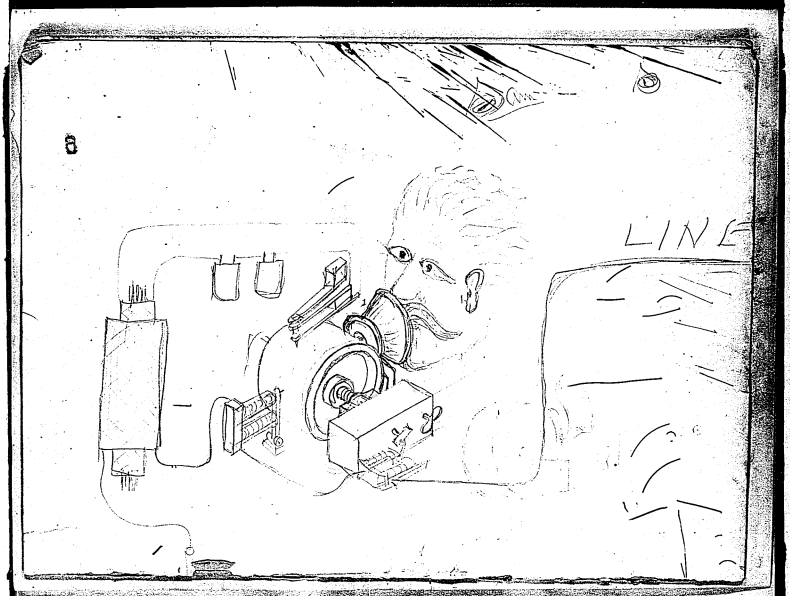


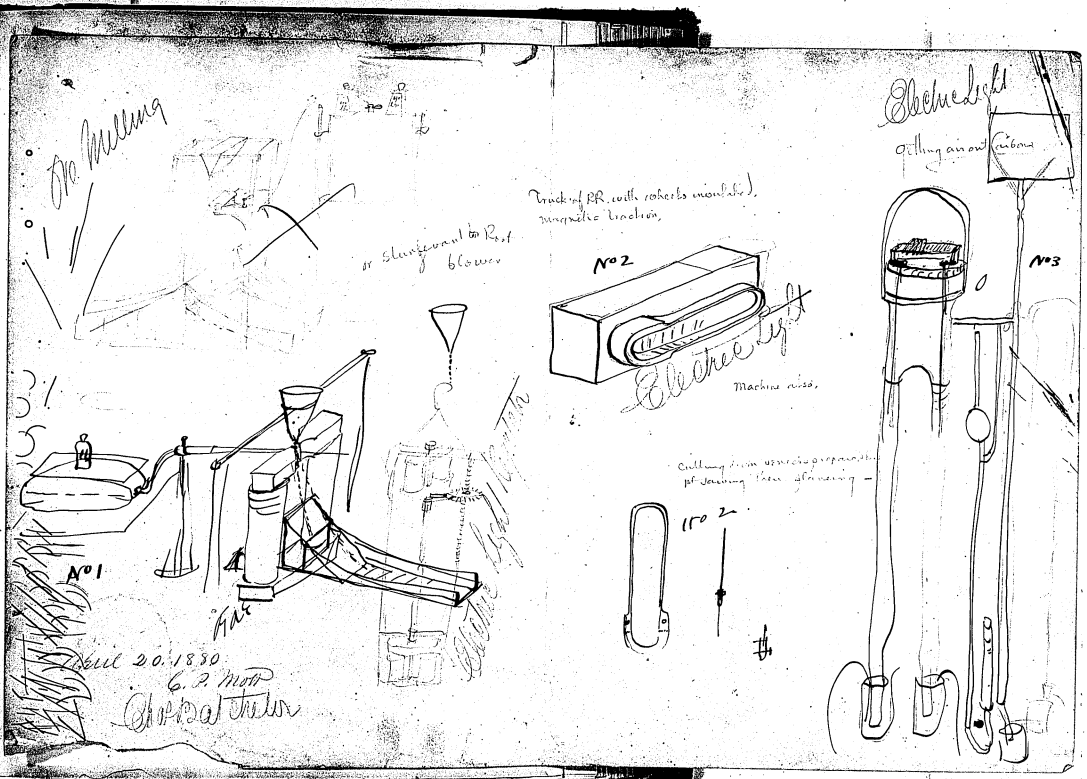
11

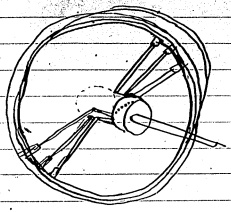


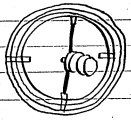
— March 1880 —

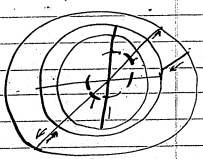


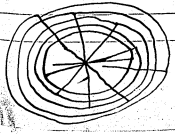

8
LINE

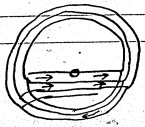

Boring
or sluicing and to Rest
blower
Truck of BR. with rockers mounted
magnetic traction
No 2
Electric light
Machine wires
No 1
No 3
Electric light
Drilling gear and Cutters
Drilling from opposite
of starting these alternately
April 20. 1880
6.2 morn


Kung Ho Fat Choy

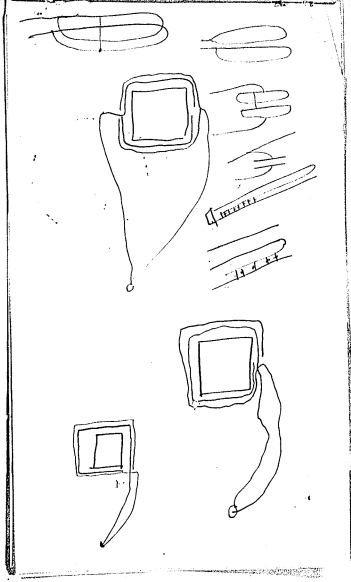


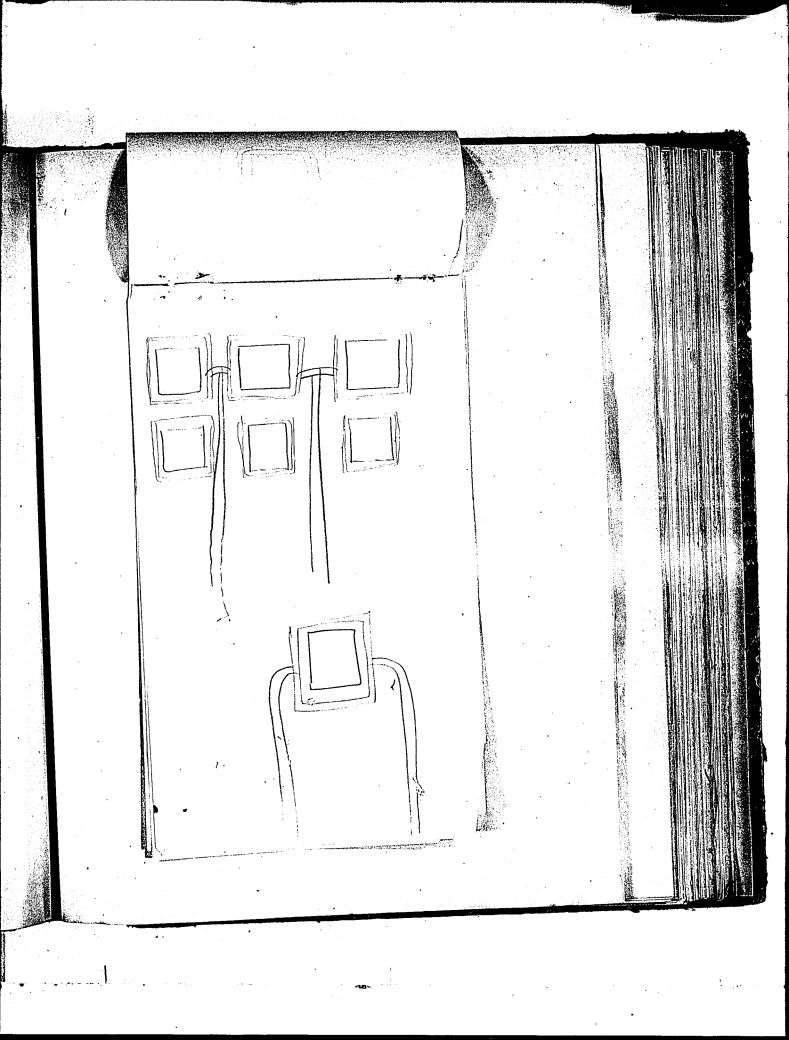


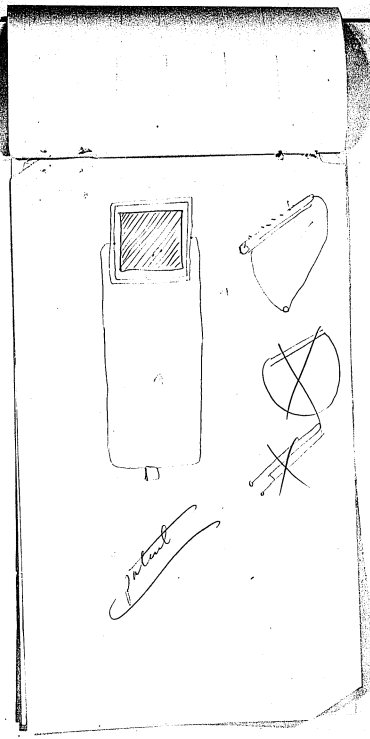


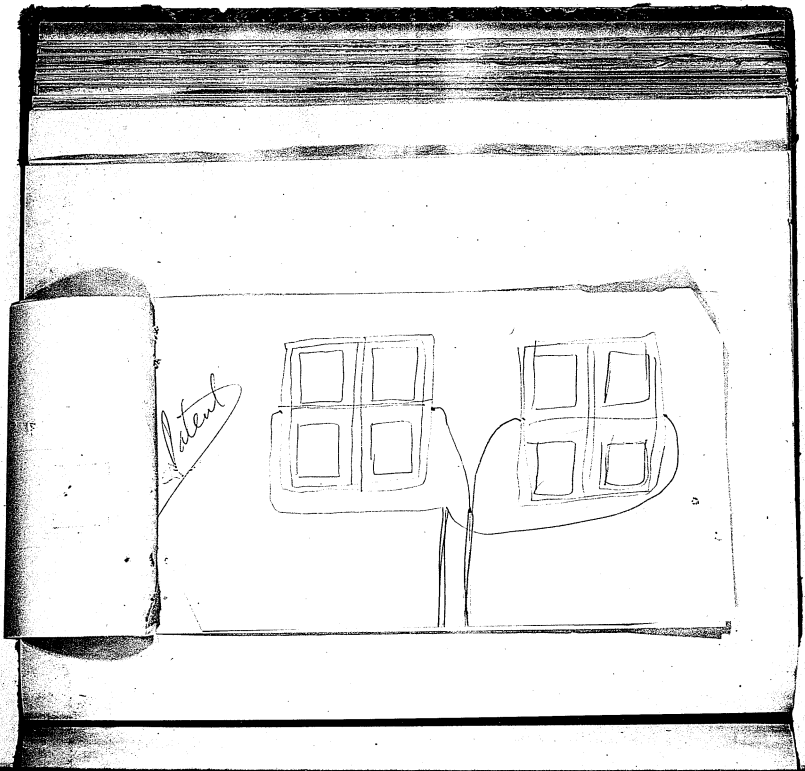


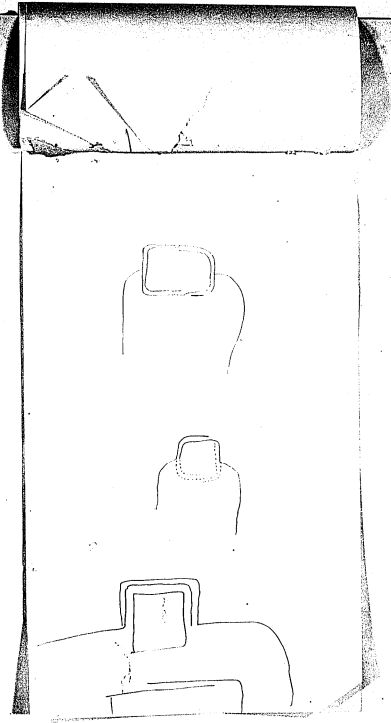
August 1880

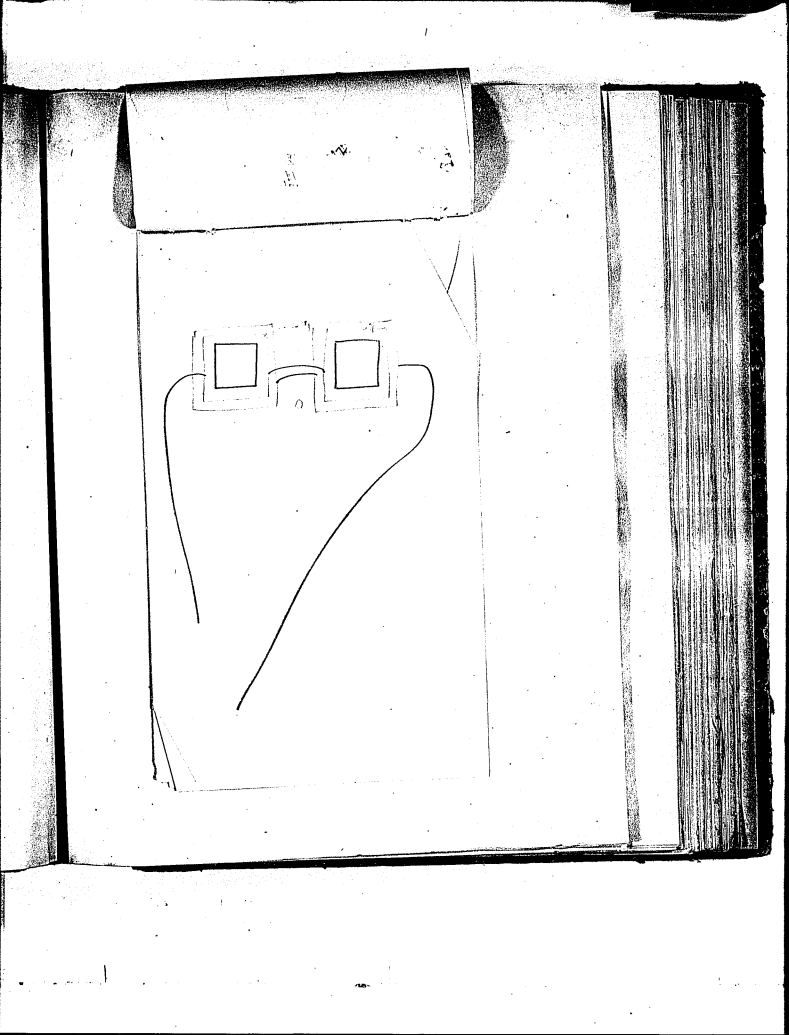


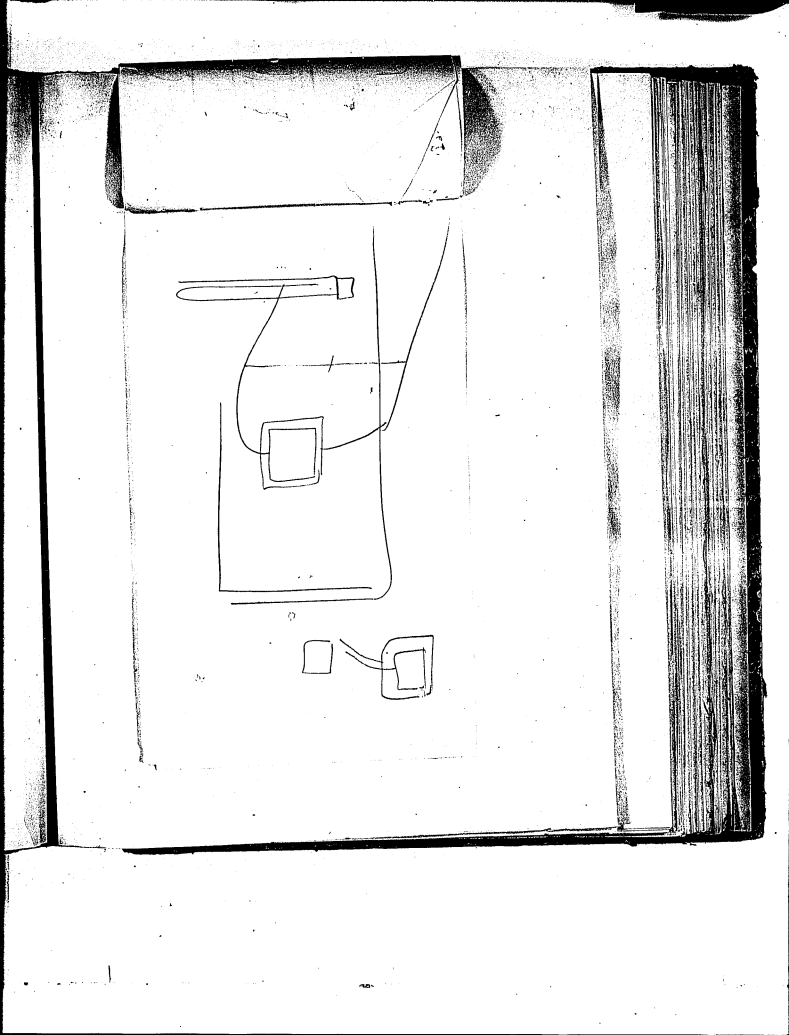


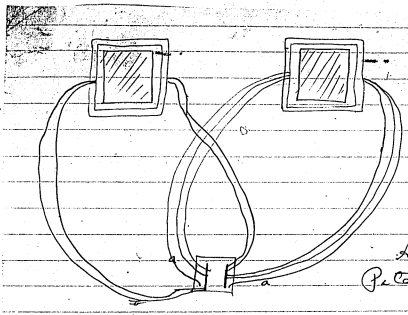



latent





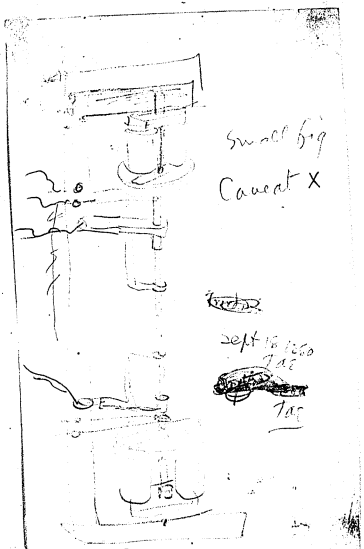




Aug 24 1880

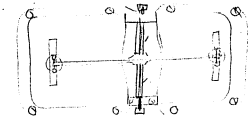
P. Coal

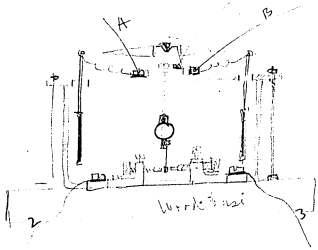
~~One~~ Block using more than other Block, or rather a Section of Block using regularly a larger no of Lamps than another Section. I prevent this on the heavy Block by adding an Extra Section of Cards, a new item of removing the Engineers wheel from Co. name the lights in the poor Block abnormally. —

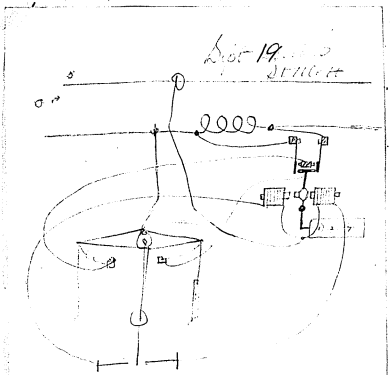

Small big
Caveat X
Oct 22, 1850
A Dillon

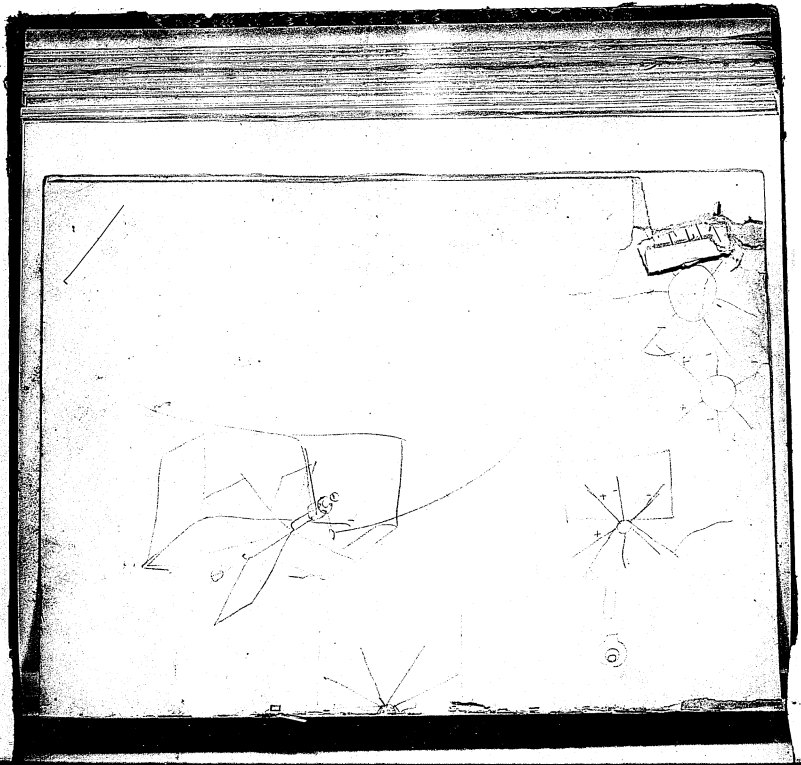
T. A. EDISON.

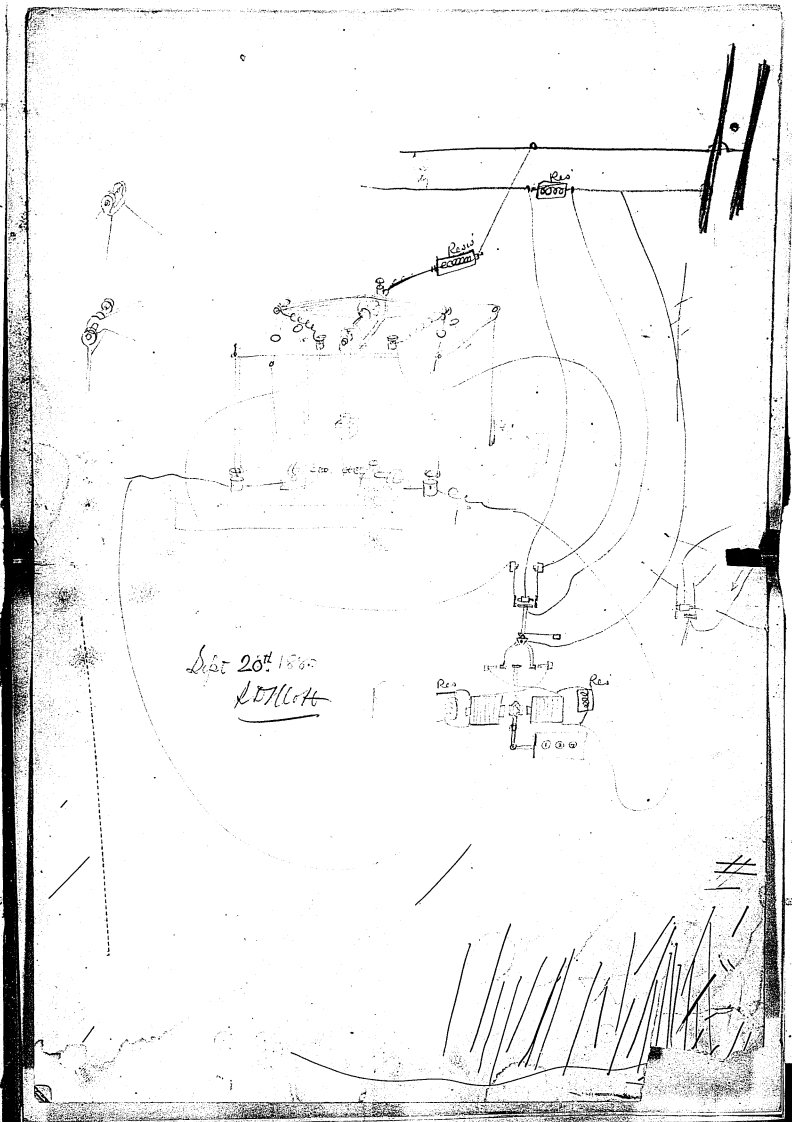
Menlo Park, N. J., 1880.



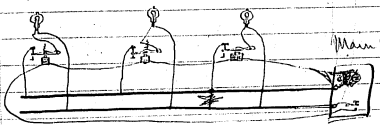






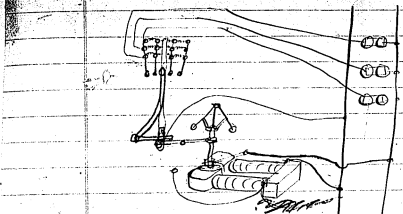

Dist 26th 1600
Rs.
Rs.
Rs.
Rs.

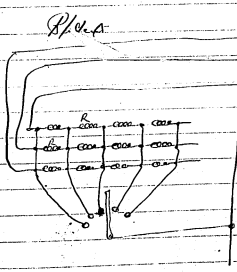
Sketch of



Patent

Sept 21st 1880.

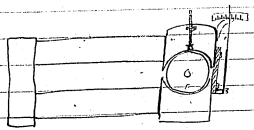




Patented Sept 21, 1880

September
1880

Sept 21 1880



Patent

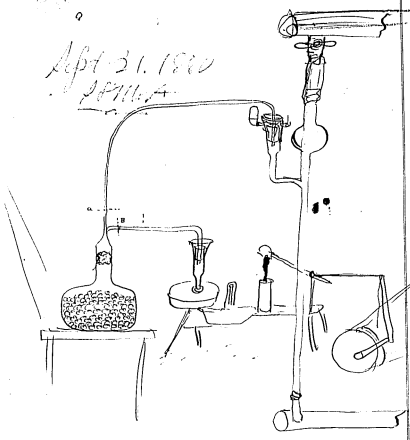
T. A. EDISON.

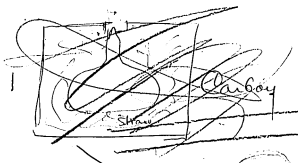
Menlo Park, N. J., 1880.

Get complete sockets different styles.

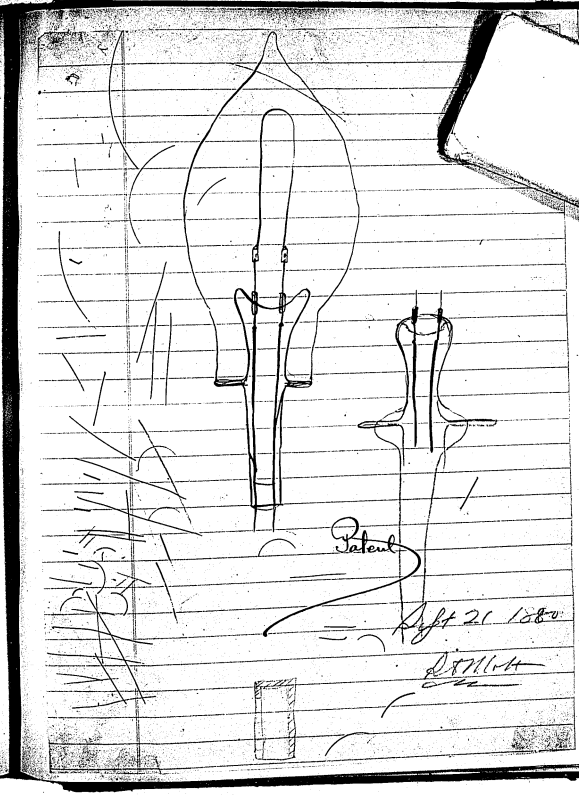
Patent —

Sept 31. 1880



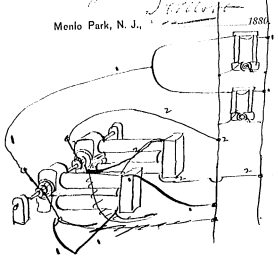


Patent


Patent
Sept 21 1880

T. A. EDISON,

Menlo Park, N. J., Sept 21 1880



Patented

The Edison Speaking Phonograph Company,

66 READE STREET.

GARDINER G. HUBBARD, *President.*

E. H. JOHNSON, *Sec'y & Treas.*

New York, [illegible] 1878

The Edison Speaking Phonograph Company, [illegible]

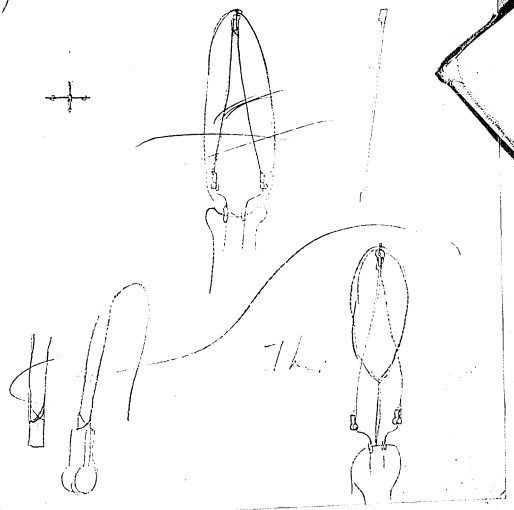
66 READE STREET.

GARDINER G. HUBBARD, *President.*

E. H. JOHNSON, *Sec'y & Treas.*

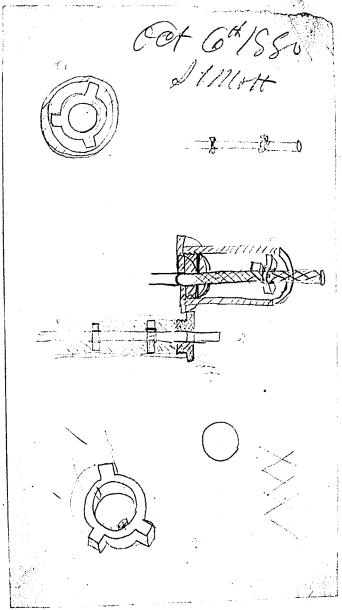
New York, Oct 6 1879.

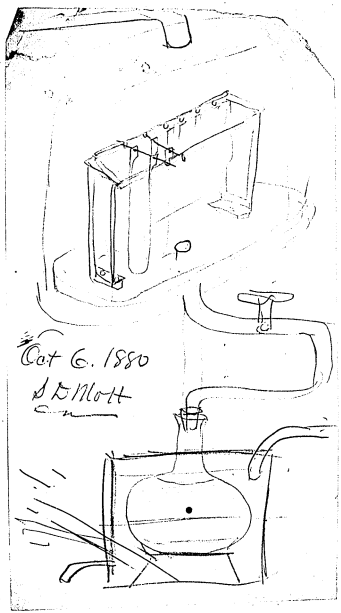
Page 2



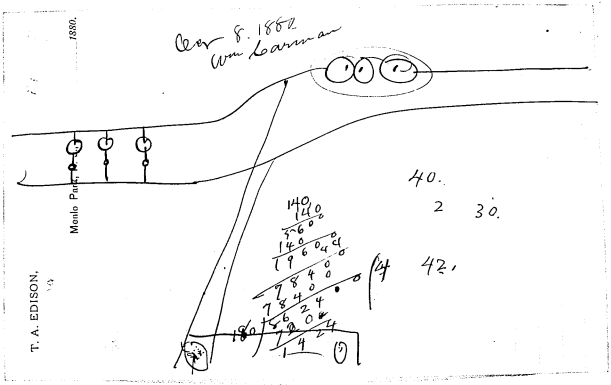
— October 1880 —

Oct 6th 1880
J Mott



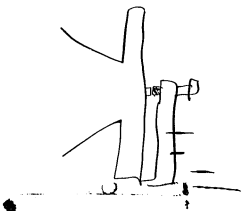

Oct 6. 1880
J D Mott

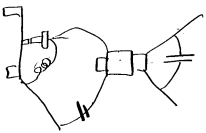
— October 1880 —

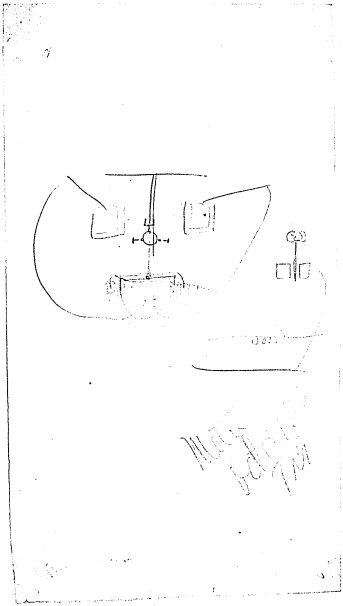


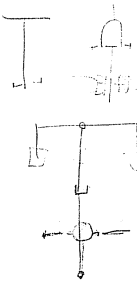
T. A. EDISON.

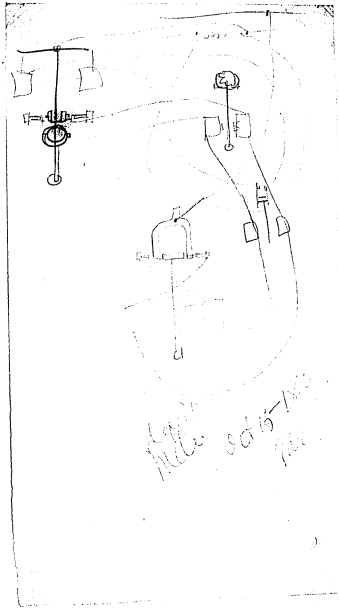
Menlo Park, N. J., Oct 9 1880.

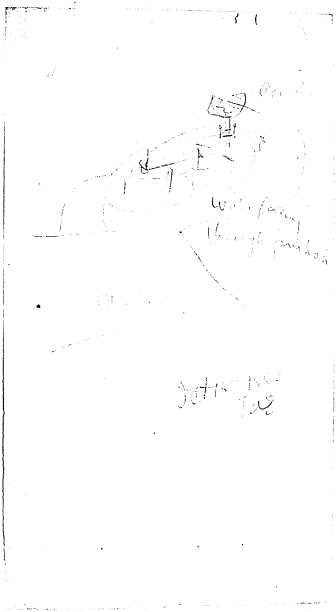




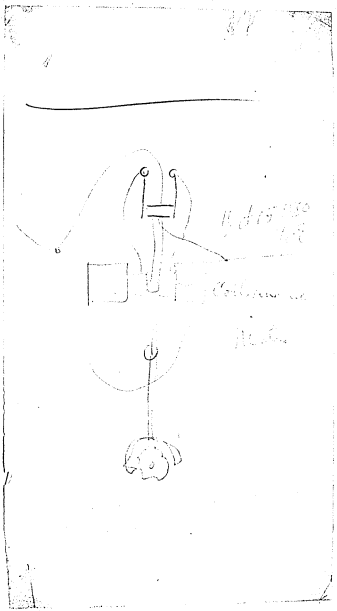




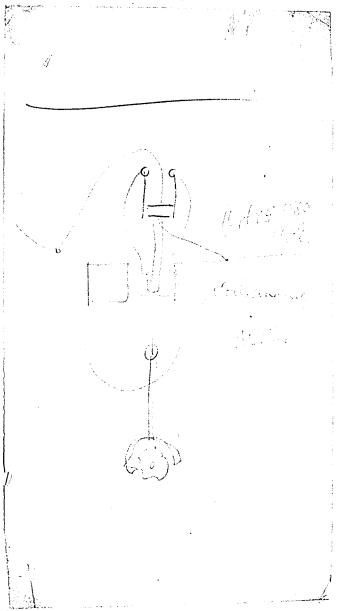


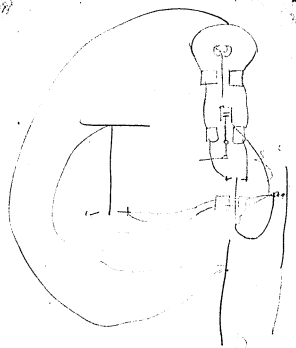


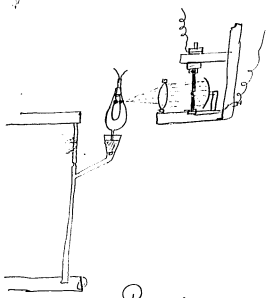
— October 1880 —



— October. 1880 —

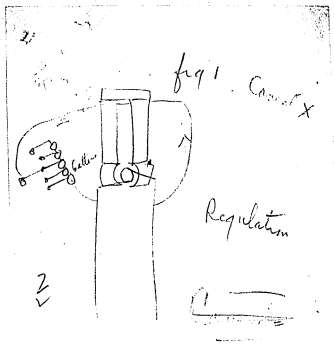






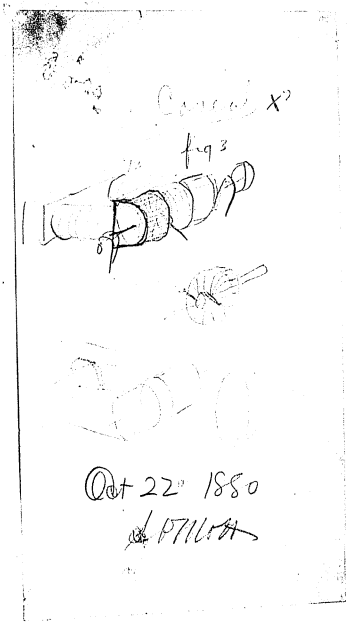
Patent

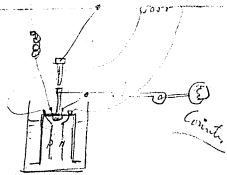
Oct 19 1880



Oct 22. 1884

J. McCoy

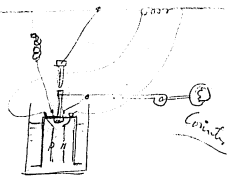

Oct 22 1880



Patent

Oct 22. 1880

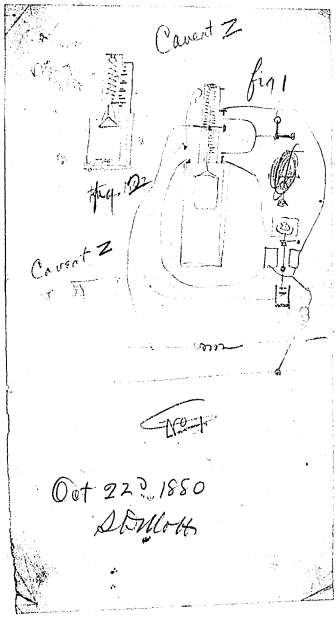
A Elliott



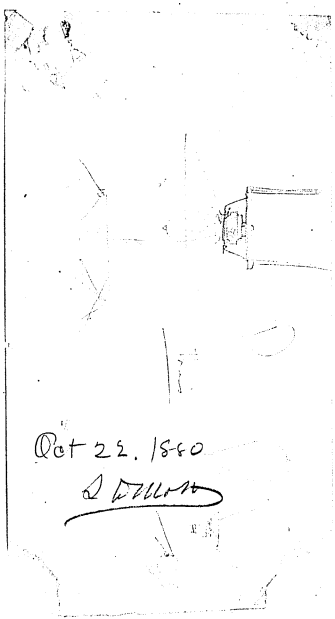
Patented

Oct 22. 1880

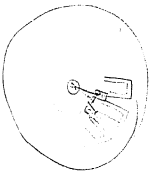
A Elliott

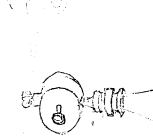


Oct 22. 1850
D. Elliott

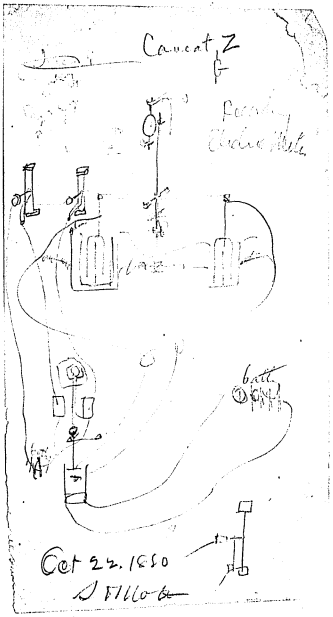


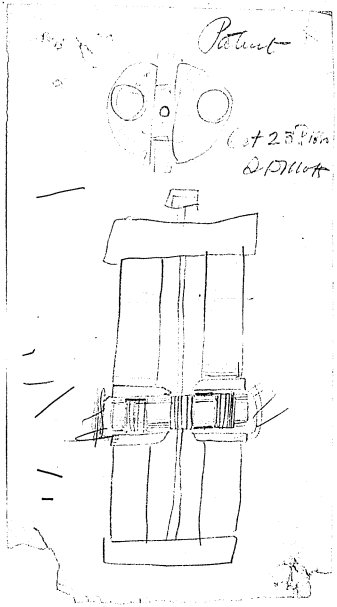
Oct 22. 1860





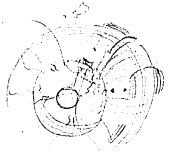
Oct 22 1850


Caveat Z
batt
Oct 22. 1850

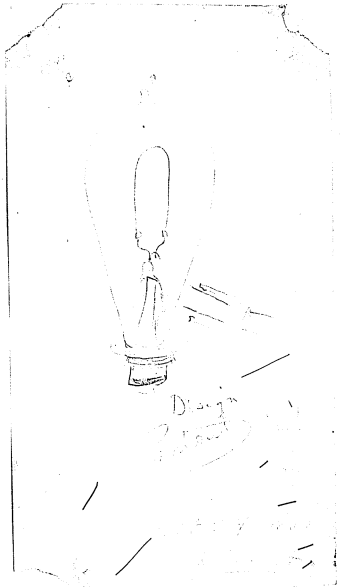

Patent
Cut 25 Pilot
2 Pilot

October 1880

Oct 23 1880



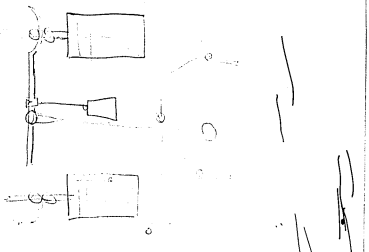
Patent

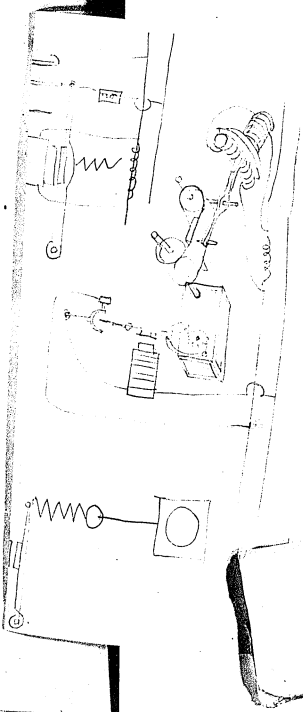


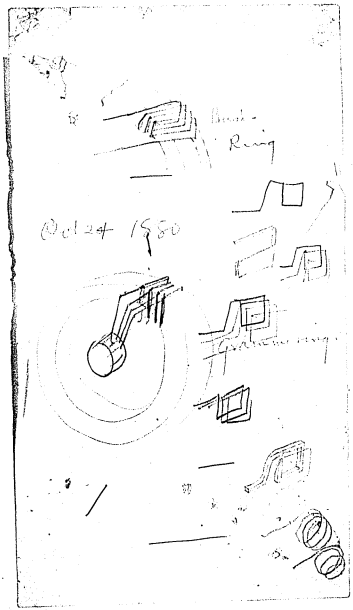
Mr. Editor, I see a note holding out [illegible]

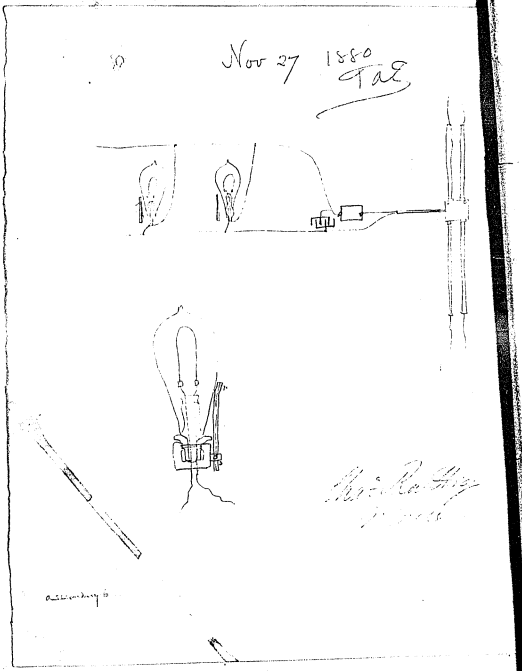
Dear Sir

"Divine Economic [illegible] wrongly applied as fatal to a great Enterprise"

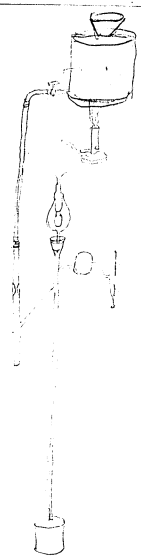




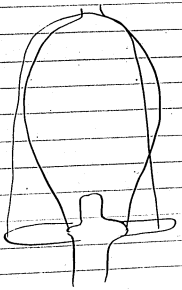

Oct 24 1950

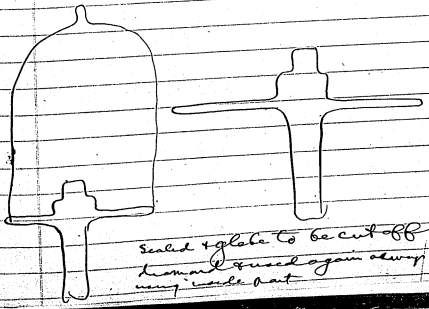

No 27 1880
T.A.E.

—November 1880—



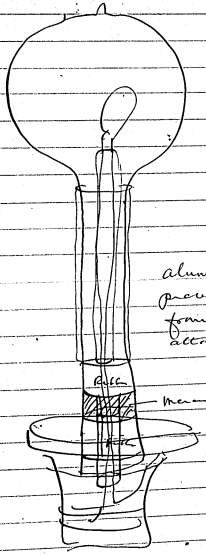
Dec 6 1880 T.A.E.





Sealed + globe to be cut off by diamond + reused again always using inside part

Dec 18 1880

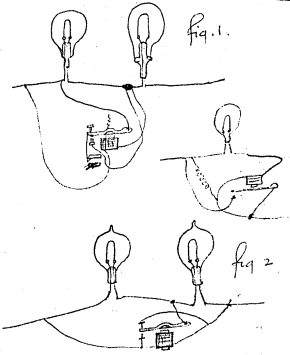

aluminum ferrule or cylinder
prevent dissipation heat
from the glass mount &
accurately Rubber
Rubber
Rubber

December 1880

~~THE~~ EDISON ELECTRIC LAMP ~~CO.~~

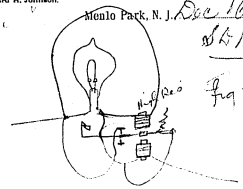
Thos. A. Edison,
Chas. Batchelor,
Francis R. Upton,
Edward H. Johnson.

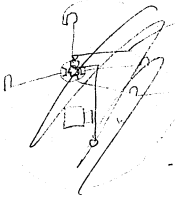
Menlo Park, N. J., Dec. 16 1880



Thos. A. Edison,
Chas. Batchelor,
Francis R. Upton,
Edward H. Johnson.

Menlo Park, N. J. Dec 16, 1880

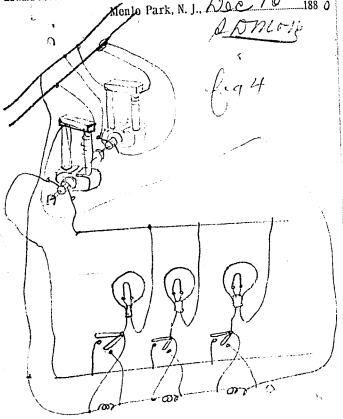




Thos. A. Edison,
Chas. Batchelor,
Francis R. Upton,
Edward H. Johnson.

Menlo Park, N. J., Dec 16 1880

Fig 4

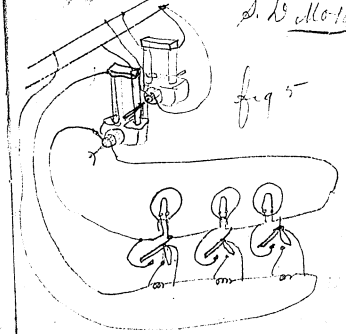


Thos. A. Edison,
Chas. Batchelor,
Francis R. Upton,
Edward H. Johnson.

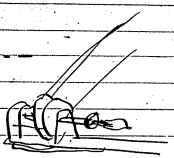
Menlo Park, N. J., Dec 16 1883

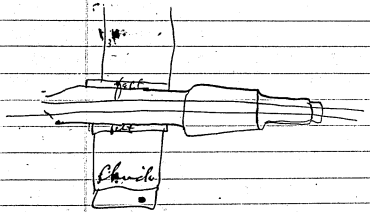
D. V. Mo-1

Fig 5

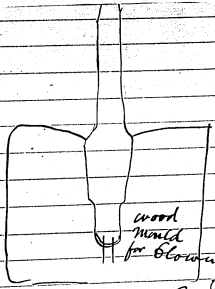


Dec 15 1880



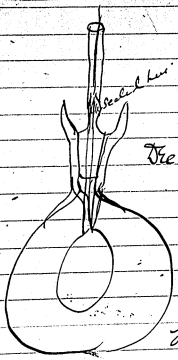


for grinding glass stopper Vacuum Lamp



Dec 15 1880

wood
mould
for blowing blank made
for stopper part
for grinding -
Stopper Vacuum part



Dec 18 1880

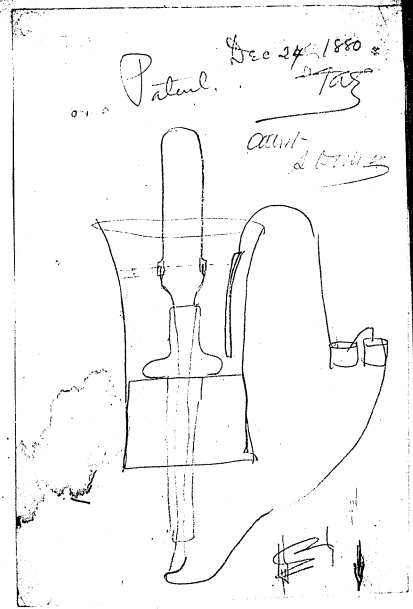
P&E

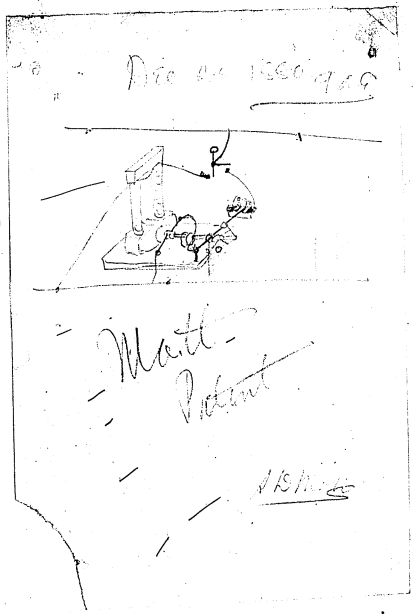
Medald Vac Stopper 4/4
6 Lamps.

Hospital

Palazzo

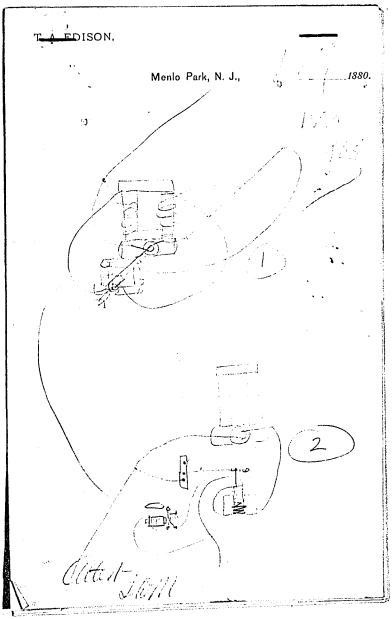
London

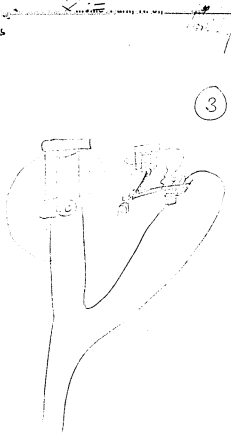

Patent.
Dec 24 1880


Mail
Patent

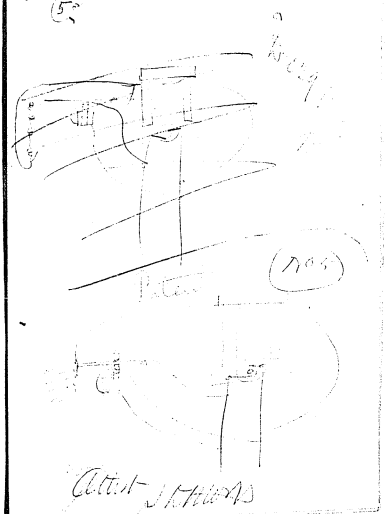
T. A. EDISON.

Menlo Park, N. J., 1880.

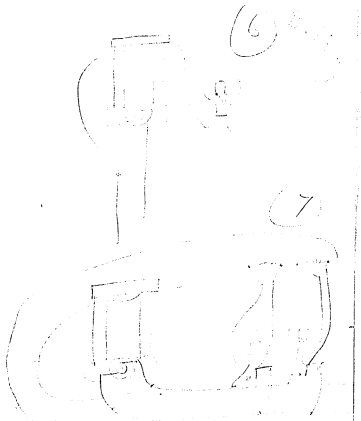
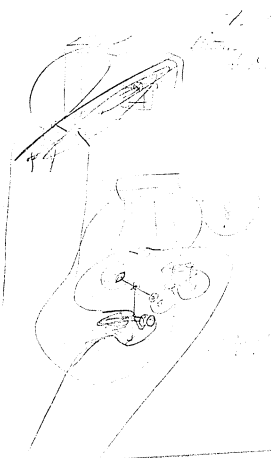




Menlo Park, N. J., 1880.



Menlo Park, N. J., 1880.



Menlo Park, N. J., *1880.*